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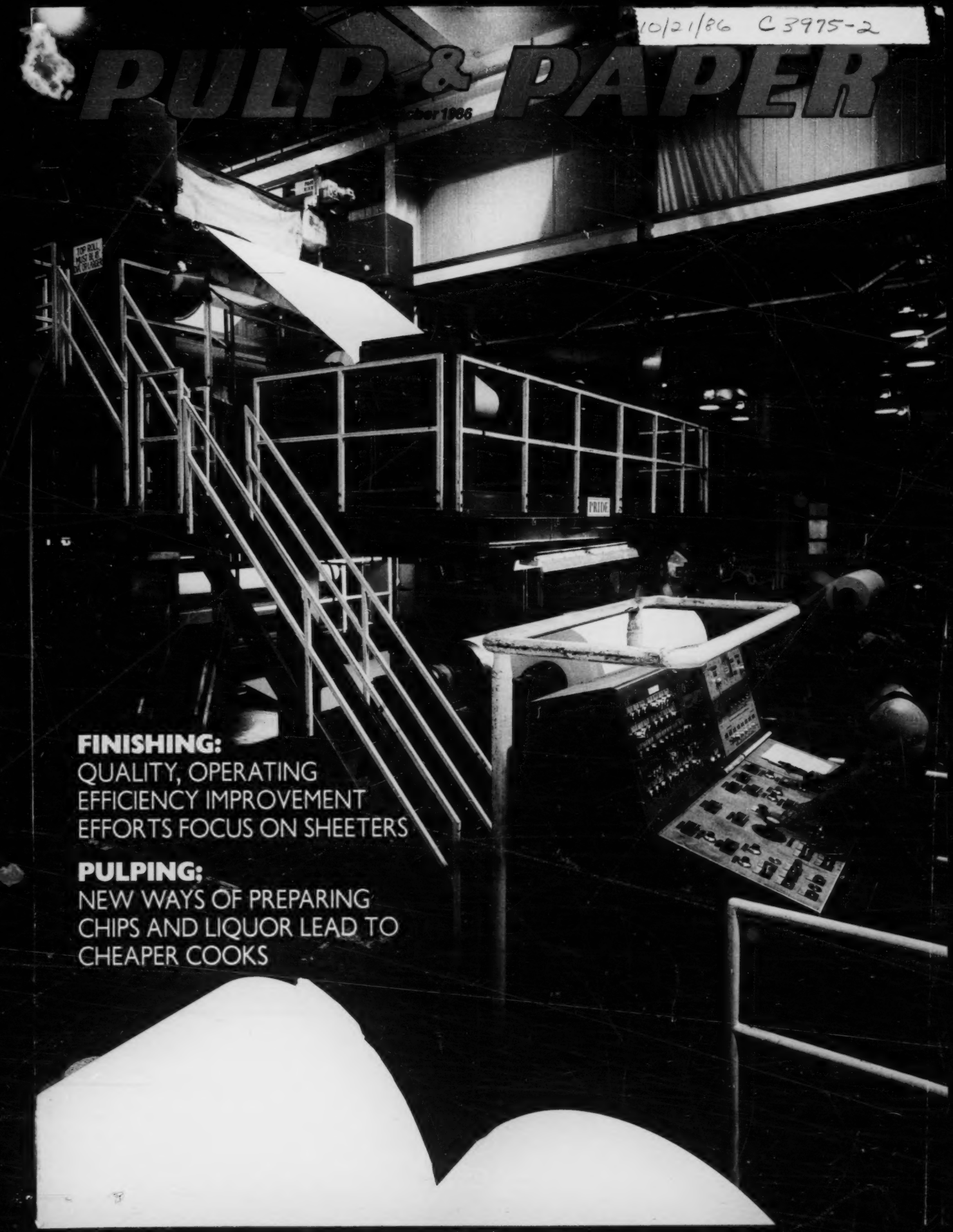
PULP & PAPER

...ber 1986



FINISHING:
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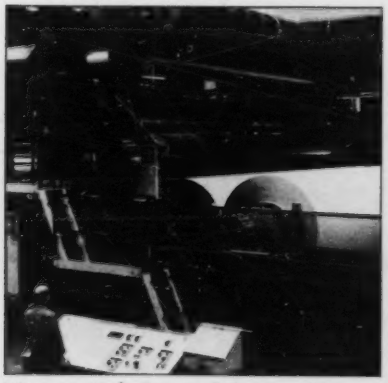

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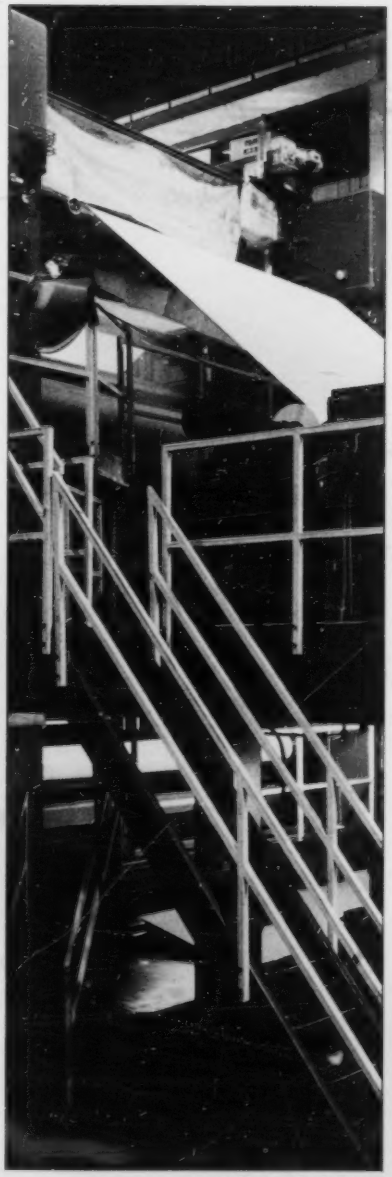

THE COVER

Supercalendering operations at Plainwell Paper Co. Inc. Plainwell celebrated its 100th anniversary this year. P&P will publish an account of the company's evolution during those years in a future issue. **(Photo by Kennedy & Green Advertising, courtesy of Chesapeake Corp.)**

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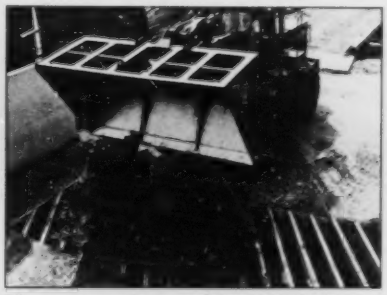

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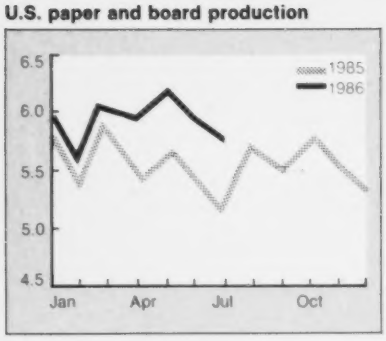
U.S. paper and board production



U.S. paper and paperboard production in July totaled about 5.7 million tons, up 6.6% from the same month last year, according to American Paper Institute data. Production in July was slightly off the fast pace of June with an annualized production rate of 70.3 million tpy—5.0% higher than last year's total.

Among major grades, bleached paperboard production continued to lead the way with a 17.4% increase over the year-earlier period. It was closely followed by recycled paperboard, which was up 11.2% for the period. Kraft linerboard maintained its healthy pace—it was up 10.4%.

Uncoated free-sheet also showed significant improvement with a 10.1% increase over July 1985. Coated paper is still struggling, but newsprint production is gaining steadily. Tissue had the biggest drop in production—it was down 11.5%. Still, total paper production was 3.1% over the year-ago level.

Canadian newsprint shipments totaled 758,000 tons in June—up 4.0%. Woodpulp shipments did better than that, increasing 10.0% to 678,000 tons for the month. ■

	Latest month (000 short tons)		% change from year ago	Annualized year-to-date (000 short tons)	% change from year ago
PAPER & PAPERBOARD PRODUCTION[1]					
Newsprint	July	477	4.2	5,603	2.1
Uncoated groundwood (s)	July	125	7.6	1,493	1.6
Coated paper (s)	July	482	2.6	6,007	−1.2
Uncoated free sheet (s)	July	872	10.1	10,438	8.3
Other printing/writing	July	106	3.9	1,380	2.8
Total packaging and other paper (s)	July	422	2.2	5,153	−0.4
Tissue	July	360	−11.5	4,997	1.3
Total paper	**July**	**2,848**	**3.1**	**35,070**	**2.9**
Unbleached kraft paperboard	July	1,327	10.4	17,455	6.3
Semichemical medium	July	441	7.0	5,300	5.1
Bleached paperboard	July	377	17.4	4,333	10.0
Recycled paperboard	July	637	11.2	8,146	8.1
Total paperboard	**July**	**2,893**	**10.3**	**35,234**	**7.2**
Total U.S. paper and paperboard output	**July**	**5,742**	**6.6**	**70,304**	**5.0**
PULP, WASTEPAPER & FIBER[2]					
Total U.S. woodpulp production	June	4,807	8.3	56,873	4.4
Market pulp production	June	481	15.4	7,476	8.6
Wastepaper consumption at paper/board mills	June	1,384	14.2	16,669	9.1
Pulpwood consumption (cords)	June	7,563	8.9	90,846	5.1
CONVERTED PRODUCTS STATISTICS[3]					
Corrugated box shipments (billion ft²)	July	23.976	7.7	163.882[6]	6.2
Containerboard inventories at U.S. box plants and mills	July 1	2,347	−17.3		
INTERNATIONAL TRADE[2]					
U.S. paper imports (including products)	June	897	1.1	11,183	0.2
Imports of Canadian newsprint	June	678	1.6	8,125[6]	−0.9
U.S. paper exports (including products)	June	376	1.9	4,638	16.0
Exports of unbleached kraft linerboard	June	160	4.6	1,986	23.4
Exports of woodpulp	June	372	0.0	4,437	19.9
Norscan pulp inventories[4]	July 31	1,041	−31.2		
Norscan pulp operating rates[4]	July	94%	94%	89%	90%
CANADIAN STATISTICS[5] *(reported in metric tons)*					
Total newsprint shipments	July	758	4.0	5,298[6]	1.5
Operating rates	July	96%	85%	93%	92%
Inventories held by U.S. consumers	July 30	1,397	−7.1		
Other paper/board shipments	July	493	15.7	3,468	10.3
Woodpulp shipments (export only)	July	678	10.0	4,519[6]	12.0
Operating rates	July	100%	86%	93%	88%

1. American Paper Institute. 2. API, Bureau of Census, American Pulpwood Assn. 3. Fibre Box Assn., Paperboard Packaging Council. 4. North American/Scandinavian paper-grade market pulp. 5. Canadian Pulp & Paper Assn. 6. Not annualized. (s) = Shipments.

PAPER-GRADE CHEMICAL MARKET PULP: Declining dollar helps strong price recovery

Grade structure: Paper-grade chemical market pulp is sold in the open market and does not include captive pulp used onsite or shipped to affiliated mills within North America. Pulp is divided into grades based on whether it is made from softwood or hardwood fiber, whether it is produced by the sulfate (kraft) or sulfite pulping processes, and whether it is bleached, semibleached or unbleached.

Northern bleached softwood kraft (NBSK) is the premium pulp grade because of its long fiber length and strength, although papermakers have been making more use of southern pine and hardwoods. Market pulp is sold in sheets, flash-dried bales, or rolls. U.S. paper pulp statistics include more than 1 million tons of fluff pulp used in diapers.

Production/capacity: North American market pulp producers are enjoying a strong recovery this year, thanks to the declining U.S. dollar, which has spurred export demand. The weak dollar has made recent pulp price increases easier for buyers in Europe and Japan to accept and has improved the cost competitiveness of U.S. and Canadian producers vs competitors in Scandinavia.

Heavy buying in anticipation of price increases announced each quarter this year have caused North American and Scandinavian producer pulp inventories to tumble. From a recent high of 1.8 million metric tons in early 1985, producer stocks dropped to a low of around 960,000 tons in mid-1986, but inventories have since risen slightly.

Through the first half of this year, Canadian and U.S. shipments were up close to 14% from a year ago, while Nordic shipments were down 5%. Total Norscan shipments were up 7.9%—a rate that indicates some customer inventory building in overseas markets. Latest statistics, however, indicate that consumer inventories in the U.S. were still at moderate levels. North American shipments are expected to remain fairly strong through the end of the year, but the rate of increase should decline in 1987.

Future outlook: Operating rates for Canadian and U.S. mills are expected to average 92% to 93% this year, up from 86% in 1985. Production at mills in British Columbia in the second half could be affected by the woodworkers strike, which is causing a shortage of woodchips. Plus, Scandinavian mills have been running at only about 82% of capacity so far this year.

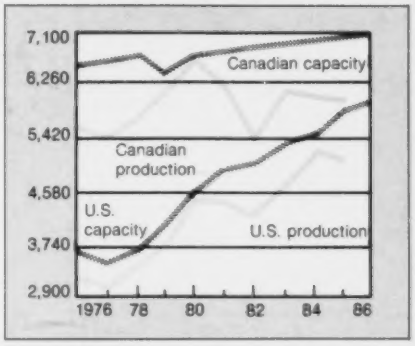
Next year operating rates for Canadian and U.S. market pulp producers could reach 94% to 95% with continued world economic growth. Rates should remain high through the end of the decade with no major capacity expansion planned in market pulp until around 1990. Most of that expansion is expected to be in nontraditional producing countries like Brazil and Portugal.

Pricing: Pulp prices have risen each quarter from depressed levels in the latter part of 1985. The benchmark price for NBSK in Europe tumbled from a peak of $540/metric ton during a British Columbian labor dispute in the second quarter of 1984 to a low of about $380 to $390 in the fourth quarter of 1985. Since then the price from North American suppliers has risen to $415 in the first quarter, $450 in the second quarter, $480 in the third quarter, and an additional price increase to $520 has been announced for the fourth quarter.

Exchange rates have been a major factor behind the price increases. The sharp decline of the dollar this year has wiped out the pulp price rise for customers in Europe and Japan in terms of their local currencies. Another factor that has helped the overall pulp price structure has been the tight supply of hardwood pulp. Hardwood pulp prices in Europe at times have been at the same level as softwood. This has helped push softwood prices up, despite some underlying oversupply from a major round of expansion projects in the first half of the 1980s.

Prices in the U.S. have followed the pattern of Europe, although they have been somewhat weaker because customers have received no relief from exchange rates. Year-end U.S. market pulp prices in $/metric ton for NBSK: 1977, $342; 1978, $375; 1979, $460; 1980, $530; 1981, $530/$565; 1982, $440; 1983, $450; 1984, $510; 1985, $390; 1986 (mid-year), $480. ■

SUPPLY/DEMAND (000 tons)



FORECAST (000 tons)

	1984	1985e	1986e
United States			
Production	5,153	5,084	5,540
Capacity	5,469	5,896	5,981
Utilization rate	94.2%	86.2%	92.6%
Imports	2,417	2,296	2,500
Exports	2,559	2,828	3,225
Apparent U.S. consumption	5,011	4,552	4,815
Canada			
Production	5,969	5,968	6,450
Capacity	6,885	6,929	7,024
Utilization rate	86.7%	86.1%	91.8%

e = Estimate.

TOP PRODUCERS (000 tpy)

	Annual capacity	Market share (%)
1. Weyco[1,2,3,5,6]	1,180[a]	9.1
2. Canfor[1,3,4]	590	4.5
3. G-P[1,2,5,6]	590	4.5
4. Parsons & Whit.[1,2]	580	4.5
5. Great Lakes[1,2,3]	575	4.4
6. Repap Enterprises	510[b]	3.9
7. BCFP[1,3,4]	480	3.7
8. MacBlo[1,3,4]	460	3.5
9. IP[1,6]	450[c]	3.5
10. GN Nekoosa[1,2,3]	400	3.1

Market share of top five companies: **27.0%**
Market share of top ten companies: **44.7%**
Total North American capacity (1986): **13.005 million metric tons**

1. Bleached softwood kraft. 2. Bleached hardwood kraft. 3. Semibleached softwood kraft. 4. Unbleached kraft. 5. Bleached sulfite. 6. Fluff pulp.
a. Includes 280,000-tpy Prince Albert, Sask., mill acquired from province. b. Includes 405,000-tpy Prince Rupert, B.C., mill purchased from Westar Timber Ltd. c. Reflects planned closure of 200,000-tpy hardwood pulp line at Natchez, Miss., in the fourth quarter.
Note: Several companies with major holdings in the market pulp sector are not shown above to avoid double counting of capacity: Noranda, 610,000 tpy (49% of MB, 50% of Northwood, 100% of Maclaren, 100% of Fraser); Canadian Pacific, 600,000 tpy (54% of Great Lakes, 100% of CIP); and Mead, 345,000 tpy (50% of Northwood, 50% of Brunswick).

Not much new liner expansion seen in near term

Limited capacity growth continues to make the outlook for linerboard supply and demand favorable over the next several years. Not a single new machine or mill in the U.S. is firmly scheduled before 1990.

According to a survey conducted by the American Paper Institute's Fourdrinier Kraft Board Group, which was released around midyear this year, unbleached kraft board capacity is only expected to increase at an average annual rate of 1.2% over the 1987-89 period. Semichemical medium capacity will only increase at a rate of 0.4% per year, while recycled medium shows the fastest growth at 3.5% per year.

Although linerboard prices have recovered substantially, they are still not high enough to justify major capacity expansion projects, according to most industry executives.

As Roger W. Stone, chairman and CEO of Stone Container Corp., noted in a recent speech, "no right-thinking businessman would spend the money to bring on significant additional capacity unless he believed that the price for linerboard, for example, in 1988 would achieve $450/short ton in the U.S. and remain at that level for some protracted period."

Nevertheless, one project promoter argues that lower capital and variable costs have made his new mill project feasible to undertake at a linerboard price of about $350. However, an engineering company executive told *P&P* that it "would be hard to make a new mill profitable at such price levels."

Incremental projects. Most new linerboard projects that are currently being planned involve the rebuilding or conversion of existing machines. The main features of some of the new projects are multi-ply formers, high-pressure press sections, and secondary fiber lines.

Willamette Industries Inc. will be adding 100,000 tpy of linerboard capacity at its Albany, Ore., mill in 1987 through the conversion of a machine currently producing medium to a multi-ply linerboard producing unit. The company will also add 70,000 tpy through a multi-ply rebuild at its Campti, La., mill during the following year (the latter is not included in the survey—see next story). Other large incremental linerboard projects are planned for Boise Cascade Corp.'s mill in DeRidder, La., and Jefferson Smurfit Corp.'s mill in Jacksonville, Fla.

In medium, Chesapeake Corp. is planning to add 125,000 tpy of recycled medium capacity early next year at its West Point, Va., mill through the conversion of a machine that formerly produced linerboard. This project accounts for most of the jump in recycled medium capacity.

Several projects are being studied that could add linerboard and medium capacity. Cascades Inc. may convert the former Nitec Paper mill located at Niagara, Wis., to recycled containerboard production. Temple-Inland Inc. is studying a major program to increase productivity of its recently acquired Orange, Texas, linerboard mill. And Southwest Forest Industries is said to be planning a major overhaul of its Panama City, Fla., mill, which will add approximately 70,000 tons annually to that mill's linerboard capacity.

The latest API Fourdrinier Kraft Board Group survey still includes the Jacksonville Kraft Paper Co. mill, which has been idle ever since October of last year but which may be reactivated sometime next January. The mill has capacity to produce about 350,000 tpy of linerboard.

■ These trends will be discussed further at *Pulp & Paper/PPI*'s Second International Unbleached Kraft Conference, which will be held Nov. 3-4, 1986, at the Waldorf-Astoria Hotel in New York, N.Y. For further information, contact: Karen Swenson, *Pulp & Paper* Seminar Dept., 370 Lexington Ave., New York, N.Y. 10017; telephone: (212) 683-9294; telex: 220442.■

Major U.S. containerboard expansion projects.

Linerboard	Mill location	Capacity (000 tpy)	Completion
Container Corp. of America	Fernandina Beach, Fla.	265	1986
Chesapeake	West Point, Va.	(256)[2]	1986
Georgia-Pacific	Monticello, Miss.	106	1986
Packaging Corp. of America	Counce, Tenn.	40	1986
Interstate Paper	Riceboro, Ga.	53	1986
Willamette Industries	Albany, Ore.	100[3]	1987
Boise Cascade	DeRidder, La.	65	1987
Longview Fibre	Longview, Wash.	35	1987
Jefferson Smurfit	Jacksonville, Fla.	88	1987
Willamette Industries	Campti, La.	70	1988
Southwest Forest Industries	Panama City, Fla.	70	n.a.
Temple-Inland	Orange, Texas	n.a.	n.a.
Corrugating medium			
Chesapeake	West Point, Va.	125[1,2]	1987
Green Bay Packaging	Green Bay, Wis.	50	1987
Willamette Industries	Albany, Ore.	(100)[3]	1987

1. Recycled. 2. Conversion of liner machine to medium. 3. Conversion of medium machine to liner. ( ) = Negative.

Willamette to rebuild liner machine at Campti

Willamette Industries Inc. said it will rebuild a linerboard machine at the Campti, La., mill to produce multi-ply linerboard. The conversion is part of a recently approved modernization program at the facility that also includes a new 30-MW turbogenerator for cogeneration.

Conversion to multi-ply will add 70,000 tpy to current capacity of 330,000 tpy. Construction will begin immediately, with completion set for early 1988. The cost of the project was not disclosed.

The linerboard machine at Campti is a 259-in.-trim, 2,000-fpm Allis-Chalmers fourdrinier that was installed in 1974. Improvements to the wet end were made to the unit in 1982, and the dry end was rebuilt in 1982 and 1984.

The Campti project follows closely on the heels of a similar rebuild program at Willamette's Albany, Ore., mill to convert No. 3 machine to multi-ply liner and boost capacity about 94,000 tpy (*P&P*, Apr., p. 25). Late last year, Chesapeake Corp. started up a new three-ply linerboard machine, which is the first of its kind in the U.S. ■

fully supports the present initiative toward freer trade between Canada and the U.S.," as well as further negotiations within the scope of the General Agreement on Tariffs & Trade to eliminate tariff and nontariff trade barriers, he noted.

Stop currency fluctuations. Hall believes that the Canadian government should allow its dollar to float, with the central bank intervening only to "moderate the range of the fluctuations." "Interest rates should not be used to "prop up a weak dollar" so industry doesn't have to suffer from an unpredictable and artificially strong currency, Hall observed.

He also called for federal and provincial governments to work with industry on a comprehensive plan for forest research and management in order to coordinate efforts to ensure fiber quality and bring it closer to the mills.

The industry itself, however, must maintain its competitive position in the future through capital expenditures that keep up with quality and productivity improvements. This will require that "management and labor work jointly to find better ways of coping with technological change," as well as maintaining "pride in their product," Hall said. ■

New newsprint mill may be built in Mississippi

Mississippi Chemical Corp. is studying the feasibility of building a greenfield newsprint mill somewhere in northeastern Mississippi. The company, based in Yazoo City, is a farmers' cooperative producing agricultural chemicals and fertilizer. Net sales were $325 million in 1985.

The location of the mill has yet to be determined, and no details on the size or configuration of the proposed facility are available yet. Other elements of the study include financing, transportation, labor, and potential markets. The study should be completed by year-end, according to company spokesman Tommy Thompson.

Mississippi Chemical's cofounder, Owen Cooper, headed a similar effort to build a newsprint mill in northcentral Mississippi in the early 1980s. Grenada Paper Co. was formed by a group that included Kruger Inc. and a consortium of 13 newspaper publishers to build a $300-million TMP/newsprint facility at Grenada, Miss. ■

FORECAST

Paper and board capacity to grow significantly

Substantial additions in capacity will be needed through 1995 to keep up with rising demand for paper and board, although plastics will continue to compete in certain markets, while electronics will have both positive and negative effects, according to a recently completed study by Freedonia Group Inc., a Cleveland, Ohio, database-research firm formed last year.

Citing other factors likely to affect the paper industry in the next decade, the report, called *Pulp and Paper to 1995*, notes that the restructuring because of divestitures and acquisitions will continue. The industry's fiber furnish needs will continue to be met primarily by woodpulp, output of which is expected to exceed 72 million tons in 1995 from 55 million in 1985, the study notes.

Wastepaper use, however, will remain at about 23% of fiber furnish due to the high cost of collection and the plentiful supplies of pulpwood. Growing and harvesting techniques are expected to improve, assuring a steady flow of pulpwood and increasing demand for sulfate pulp, Freedonia indicates.

U.S. demand for paper and board will continue to lag growth in real GNP, increasing just 2.6% annually over the decade, but consumption will rise to 100 million tons by 1995. Paper production will approach 47 million tons, rising 3.2% annually from 34 million tons in 1985, as a result primarily of the growth in business papers and a rising share of U.S. produced newsprint.

Beyond the mid-1990s, however, the growth in printing and writing papers will weaken as nonpaper media such as microforms, compact discs, and electronic media become more sophisticated, the study notes. Long-term demand for paper will also be stunted by the saturation of the consumer tissue market and the strides made by plastic packaging in some sectors. In addition, continued weight reduction of paper-based products as a result of advances in low-density technology will also heighten competition over the next decade.

Paperboard production is projected to rise 2.3% annually, reaching nearly 42 million tons in 1995, according to Freedonia. Inroads by plastics will curtail the growth of various

U.S. paper and pulp outlook (000 tons).

Item	1985	1995	% annual growth 1975-85	% annual growth 1985-95
GNP ($ billion, 1982)	3,571	4,890	2.3%	3.2%
FRB index (1977=100)	124.5	178	2.6	3.6
Population (million)	238.8	260.5	.94	.87
Paper and paperboard				
Consumption	76,629	99,325	1.8	2.6
Net imports	7,595	9,375	—	—
Production	69,034	89,950	1.6	2.7
Paper	34,044	46,800	2.3	3.2
Paperboard	33,190	41,850	1.4	2.3
Construction grades	1,800	1,300	−4.9	−3.2
Fiber requirements	**70,575**	**92,150**	**1.4**	**2.7**
Woodpulp	53,975	70,700	1.4	2.7
Wastepaper	16,200	21,100	1.7	2.7
Other fiber	400	350	−5.5	−1.3
Woodpulp requirements				
Ton pulp/ton paper and board	0.782	0.786	—	—
Pulp consumed in paper and board	53,975	70,700	1.4	2.7
Fluff and other pulp and inventory	1,750	2,150	—	—
Total pulp consumed	55,725	72,850	1.6	2.7
Net imports	675	700	—	—
Woodpulp production	55,050	72,150	1.7	2.7

Source: Freedonia Group, Inc.

packaging grades, but strong overseas demand for linerboard and other containerboard, as well as for unbleached kraft, will boost the output of board.

Construction paper and board demand, however, is expected to continue to fall off due to competing materials and a weaker residential construction market projected over the next ten years. ■

LABOR

CPU approves reopening merger talks with unions

The Canadian Paperworkers Union will again explore a merger with other forestry and paper industry unions in Canada, following the union's biannual convention in St. John, N.B., a CPU spokesperson said. CPU's president, James M. Buchanan, was also reelected to another two-year term, which will expire September 1988.

Delegates to the convention gave union leaders a mandate to open merger negotiations with all of the other forestry and paper industry unions throughout Canada. Included in this group would be the Pulp, Paper & Woodworkers of Canada, International Woodworkers of Canada, Confederation of National Trade Unions, Lumber & Sawmill Workers Union, and Energy & Chemical Workers Union.

In 1982, a proposal to merge with the ECWU was rejected by 52% of CPU delegates. Buchanan had recommended the merger to compensate for loss of CPU members.

In the U.S. last year, a merger proposal between the Oil, Chemical & Atomic Workers Union and the United Paperworkers International Union was approved by OCAW but later rejected by a 63.5% vote of UPIU delegates (*P&P*, Jan. 1986, p. 31). ■

Strikes end at James River, Thilmany Pulp, and PCA

Members of the United Paperworkers International Union agreed to a new contract at James River Corp.'s 400-tpd paper mill at Parchment, Mich., and its 450-tpd recycled board mill at Kalamazoo, Mich. The new three-year agreement was ratified Aug. 30, ending a strike that began July 24.

The contract, effective Sept. 2, has no wage increase in the first year and increases of 2.875% and 2.875% in the last two years. In addition, three health maintenance organization alternatives to the modified company medical plan were offered to the workers. One of the issues in the strike had been the company's intention to implement a comprehensive medical plan that would raise employee contributions for health care. The contract expires July 22, 1989.

■ UPIU employees ratified a three-year contract at **Thilmany Pulp & Paper Co.**'s 555-tpd special industrial papers mill in Kaukauna, Wis., ending a strike that began Aug. 8. The new agreement calls for wage increases of 0%/2%/2% and improves pensions and other benefits. In addition, the company can operate the mill on all holidays except July 4 and Christmas. The contract was effective Aug. 1 and expires July 31, 1989.

■ A new three-year contract was approved by UPIU workers at **Packaging Corp. of America**'s molded pulp mill at Plattsburgh, N.Y. The mill had been struck Aug. 15. The agreement gives workers a $500 lump sum payment and a 3% wage increase in the first year and increases of 3% in each of the next two years. The contract is effective Aug. 29, 1986, and expires July 31, 1989. ■

K-C cuts 355 from Terrace Bay, Ont., work force

Kimberly-Clark Corp. said it would cut 255 full-time and 100 part-time workers from its Terrace Bay, Ont., mill and Longlac, Ont., woodlands work force immediately to reduce losses and avert a closure. Earlier this year, the company had indicated that some action would be needed to justify keeping the operation open.

At the mill, a work force of about 1,000 will be cut by 206. The woodlands operations would lose 49 employees, and the remaining staff of about 750 will be layed off during a two-month curtailment as of Sept. 2, the company said. Early retirement will be offered to 109 eligible employees prior to the layoffs.

A close source said that further cost-cutting steps would be considered in 1987 and would depend on the company's wood requirements. The current "survival plan" is expected to bring costs in line at the 1,250-metric-tpd bleached kraft market pulp mill in Terrace Bay but would only partially offset high costs in the woodlands operations.

The mill lost C$78 million over the past eight years, including C$17 million in 1985. Also, K-C has been using less of the mill's output to supply its U.S. tissue mills, requiring only 55% of last year's production. The trend was to use more eucalyptus pulp.

At K-C's annual meeting earlier this year, company chairman and CEO, Darwin E. Smith, said,"our investment in Canada is totally out of proportion to the income from that investment," noting that "alternate solutions" were being weighed. ■

LABOR BRIEFS

■ **Weyerhaeuser Co.** has reached an agreement with members of the UPIU, IBEW, and International Union of Operating Engineers at its 1,950-tpd containerboard and fine papers mill at Plymouth, N.C. The new contract was ratified Aug. 23 and calls for wage increases of $1,200/3%/2.5%. In addition, it removes operating restrictions for Dec. 24-26 and contains flexible work rules. The contract runs from Aug. 1, 1986 to July 31, 1989.

■ Members of the UPIU ratified a new three-year contract with **Brunswick Pulp & Paper Co.** at the company's 400-tpd bleached kraft mill at Brunswick, Ga. The agreement, effective Aug. 1, calls for an undisclosed lump sum payment in the first year and 3% increases in the next two years before expiring on July 31, 1989.

■ A new three-year contract was ratified by UPIU members at **Potlatch Corp.**'s 535-tpd bleached paperboard mill at Cypress Bend, Ark. The agreement calls for wage increases of $1,000/3%/3%, eliminates operating restrictions for Dec. 24-26, and institutes a comprehensive medical plan. The contract is effective Aug. 1 and expires July 31, 1989.

■ **Champion International Corp.** concluded negotiations with UPIU employees at its 720-tpd printing papers mill at Sartell, Minn., and its 1,100-tpd linerboard mill at Roanoke Rapids, N.C. The Sartell contract is effective June 2, 1986, and calls for lump sum payments of $1,100 to production workers and $800 to maintenance workers in the first year, a 37¢ increase in the second year, and a 2.5% increase in the last year. Roanoke contract's gives workers $1,000 in the first year and increases of 37¢ an hour and 2.5% in the last two.

ALKALINE PULPING: Price, equipment influencing use

Cooking. Sodium sulfate, or saltcake, is in a continuing state of flux regarding its use in pulp mills. Consumption levels, related mostly to the production of kraft pulp, have been tough to track during the 1980s due to market influences such as competing products, price, and supply. The main use of saltcake in pulping is as a recovery loop additive for balancing sodium/sulfur levels. Recently, these have been substituted with emulsified sulfur, caustic soda, and soda ash. Chief factors have been price and, less so, convenience.

Prices for pulp-grade saltcake are currently $55/ton, f.o.b. works, with reportedly firm prices in the Southeast, where demand is steady, and discounts of 10% to 20% appearing elsewhere in the U.S. and Canada. These prices represent a decrease from last year, but saltcake's competitive position did not improve as the prices of competitive products are depressed too. Overall consumption for the industry will remain near last year's level of just under a half-million short tons (one-third of a million metric tons in Canada), with the best forecasts calling for zero or negative growth for the remainder of the decade. Some saltcake may find its way into high-yield operations—maybe in Canada—but not enough to offset losses from competing products.

Adjustments such as lowering sulfidity, which is becoming more attractive with improved digester control, will also curtail use of saltcake and increase consumption of emulsified sulfur and caustic in production. The supply of saltcake is also slimming a bit, as more producers adjust to the soft demand situation by upgrading their products for use in other markets. One example is the decision of Courtaulds North America Inc. to produce a higher-quality sodium sulfate grade from its Mobile, Ala., plant for purity levels required by detergent and textile consumers.

Demand for pulp additives like defoamers and specialty chemicals is strong, according to most suppliers. Overloaded washers, more use of lower-quality wood, and generally strong operating rates are the factors involved in their strong consumption.

Defoamers, added to the brown-stock washing system at the knotters, vat showers, or screens, are applied from 1 lb/ton (for a newer or very efficient system), to more typically between 2 and 4 lb/ton, up to several pounds per ton for a system that is operating above capacity. Softwood operations tend to be on the high end, while hardwood operations consume somewhat lower amounts. Efforts by equipment manufacturers (most notably Black Clawson, with documentation by Georgia-Pacific) have helped curtail defoamer use by developing new-design washers. Sunds and Impco have also developed new types of washers.

These washers are said to dramatically cut defoamer use in hardwood operations, while somewhat reducing consumption in softwood applications. Market acceptance has been slow, and no real impact on defoamer consumption will be evident soon.

Specialty items, having been pursued by suppliers recently due to favorable pricing, are appearing more frequently in pulp processing. Products for pitch control, microorganism control, and pulp dispersion are all being applied, typically on a customized basis. Furnish seems to be a large consideration in applying most of these products. Growth will continue for them as more inferior wood is processed and water system closure becomes more common.

Recovery. Limestone and pebbled lime are typical inputs for replacing calcium lost during kraft recovery operations. The recausticizing loop begins at the lime kiln, where carbon dioxide is driven off calcium carbonate to form calcium oxide (lime). About ninety percent of the lime is recovered, mixed with makeup and sent to a slaker, and combined with dissolved smelt to form white liquor. Development in slaking, elevating temperature and pressure, is being conducted overseas.

Demand for lime is tied to production levels, while price is often controlled by other facets of the economy, like steel production. Usage trends do not seem to be varying much with regard to new equipment, lime product employed, etc., so consumption patterns will probably follow production of kraft pulp closely. ■

TABLE 2: **Canadian demand for kraft chemicals, metric tons.**

Chemical	Kraft pulping	All P&P	All industry	Price[1]
Saltcake	237,000	265,000	300,000	$85/ton
Caustic	230,000	910,000	1,516,600	$225/ton[2]
Lime products	240,000	500,000	1,955,000	$60/ton[3]
Defoamers	11,000	16,000	—	$1.00-1.30/lb

1. All prices are in Canadian dollars and represent list prices.
2. 50% solution, f.o.b. works, freight equal.
3. Quicklime, f.o.b. Ontario producing points.

TABLE 1: **U.S. demand for kraft chemicals, short tons.**

Chemical	Kraft pulping	All P&P	All industry	Price
Saltcake	425,000	450,000	1,000,000	$65/ton[1]
Caustic	355,000	1,820,000	10,400,000	$175/ton[2]
Lime	556,000	1,112,000	15,000,000	$45/ton[3]
Defoamers	18,000	25,000	—	$0.80-$1.00/lb

1. Bulk purchase, 100% basis, f.o.b. works, East Coast; West Coast price add $10.
2. 50% solution, Gulf Coast works, freight equal.
3. Quicklime, bulk f.o.b. plants